

AMENDMENTS TO THE CLAIMS

1 (Original). A method of determining a configuration of a well, comprising:
receiving, at a first module executable in a system, input data relating to characteristics of a reservoir and a well surface arrangement; and
selecting, by the first module based on the input data, a trajectory of a wellbore in the well, a type of interface between the reservoir and the wellbore, and completion equipment for installation in the wellbore.

2 (Original). The method of claim 1, further comprising displaying an output representing the selected wellbore trajectory, type of interface, and completion equipment in a user interface of the system.

3 (Original). The method of claim 1, further comprising determining, by the first module based on the input data, if the well is to be a multilateral well.

4 (Original). The method of claim 3, wherein determining if the well is to be a multilateral well comprises determining a type of multilateral well based on one or more of the following factors: the reservoir is mature, flooded, or depleted; a platform has slot constraints; the well has a high-pressure, high-temperature region; the well has a naturally fractured reservoir; the well has a reservoir with heavy oil; the reservoir is a layered reservoir; the reservoir permeability; and the thickness of the reservoir.

5 (Original). The method of claim 1, wherein receiving input data relating to the characteristics of the reservoir comprises receiving data relating to one or more of the following: a geometry of the reservoir; if the reservoir is fractured; if the reservoir contains heavy oil; a permeability of the reservoir; a vertical permeability to horizontal permeability ratio in the reservoir; a variation of the permeability in the reservoir; and a drive mechanism of the reservoir.

6 (Original). The method of claim 5, wherein receiving input data relating to the well surface arrangement comprises receiving an indication of whether the well surface arrangement is a land well, an offshore well with a surface platform, or a subsea well.

7 (Original). The method of claim 6, wherein selecting the well trajectory comprises selecting one of a vertical well, a slant well, and a horizontal well.

8 (Original). The method of claim 5, wherein selecting the type of interface between the reservoir and wellbore comprises selecting one of an open hole completion, a cased hole completion, and a slotted liner completion.

9 (Original). The method of claim 8, further comprising receiving input data relating to whether a formation containing the reservoir is a sandstone formation or a carbonate formation,

wherein selecting the type of interface is further based on receiving the input data relating to the formation.

10 (Original). The method of claim 1, wherein selecting the completion equipment comprises selecting an arrangement of a lower completion in the well.

11 (Original). The method of claim 10, wherein selecting the arrangement of the lower completion comprises selecting a type of sand control arrangement.

12 (Original). The method of claim 1, wherein selecting the completion equipment comprises selecting a type of artificial lift system.

13 (Original). The method of claim 1, wherein selecting the completion equipment comprises selecting at least one of a flow control device and a sensor.

14 (Original). The method of claim 1, further comprising refining a proposed configuration generated by the first module, the proposed configuration comprising the well trajectory, the reservoir-wellbore interface, and the completion equipment.

15 (Original). The method of claim 14, wherein refining the proposed configuration comprises one or more of the following: determining placement of the well with the proposed well trajectory in the reservoir; determining placement of perforations; and determining a position of completion equipment.

16 (Original). The method of claim 15, wherein refining the proposed configuration is based on a predefined performance measure.

17 (Original). The method of claim 16, wherein refining the proposed configuration is based on a constraint selected from the group consisting of a target production rate, a target gas-to-oil ratio, and a target bottom-hole pressure.

18 (Original). The method of claim 16, wherein refining the proposed configuration comprises invoking a simulator to assess performance of the proposed configuration.

19 (Original). The method of claim 18, wherein refining the proposed configuration comprises invoking an economics tool to determine effect of the proposed configuration on a predefined economic measure.

20 (Original). An article comprising at least one storage medium containing instructions for determining a configuration of a well, the instructions when executed causing a system to:

receive input data relating to characteristics of a reservoir and a well surface arrangement; and

generate a proposed configuration of the well using a rule-based analysis, the proposed configuration including a trajectory of a wellbore in the well, a type of interface between the reservoir and the wellbore, and completion equipment for installation in the wellbore based on the input data.

21 (Original). The article of claim 20, wherein the instructions when executed cause the system to further determine, based on the input data, if the well is to be a multilateral well.

22 (Original). The article of claim 20, wherein the instructions when executed cause the system to receive the input data relating to the characteristics of the reservoir by receiving data relating to one or more of the following: a geometry of the reservoir; if the reservoir is fractured; if the reservoir contains heavy oil; a permeability of the reservoir; a vertical permeability to horizontal permeability ratio in the reservoir; a variation of the permeability in the reservoir; and a drive mechanism of the reservoir.

23 (Original). The article of claim 22, wherein the instructions when executed cause the system to receive input data relating to the well surface arrangement by receiving an indication of whether the well surface arrangement is a land well, an offshore well with a surface platform, or a subsea well.

24 (Original). The article of claim 20, wherein the instructions when executed cause the system to generate the proposed configuration by selecting an arrangement of a lower completion in the well.

25 (Original). The article of claim 24, wherein the instructions when executed cause the system to generate the proposed configuration by further selecting a type of sand control arrangement.

26 (Original). The article of claim 20, wherein the instructions when executed cause the system to generate the proposed configuration by selecting a type of artificial lift system.

27 (Original). The article of claim 20, wherein the instructions when executed cause the system to generate the proposed configuration by selecting at least one of a flow control device and a sensor.

28 (Original). The article of claim 20, wherein the instructions when executed cause the system to further refine the proposed configuration.

29 (Original). The article of claim 28, wherein the instructions when executed cause the system to refine the proposed configuration by performing one or more of the following: identify a placement of the well with the proposed well trajectory in the reservoir; identify a placement of perforations; and identify a position of completion equipment.

30 (Original). The article of claim 29, wherein the instructions when executed cause the system to refine the proposed configuration based on a predefined performance measure.

31 (Original). The article of claim 30, wherein the instructions when executed cause the system to further invoke a simulator to assess performance of the proposed configuration in refining the proposed configuration.

32-35 (Canceled).